

ORIGINAL

**TRANSCRIPT OF PROCEEDINGS**

**NATIONAL PETROLEUM COUNCIL**

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Washington, D.C.  
December 9, 1976

Pages 1 thru 43

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THE NATIONAL PETROLEUM COUNCIL

Thursday,  
December 9, 1976  
9:00 o'clock a.m.

United States Department of the  
Interior Auditorium  
18th and C Streets, N.W.  
Washington, D. C.

The meeting of the National Petroleum Council  
was called to order shortly after 9:00 o'clock a.m.

Presiding were:

John E. Swearingen as Chairman  
Honorable Thomas S. Kleppe as Cochairman

C O N T E N T Spage

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P R O C E E D I N G S

1  
2 CHAIRMAN SWEARINGEN: The 75th meeting of the  
3 National Petroleum Council will please come to order.

4 You have before you, ladies and gentlemen, a copy  
5 of this meeting's agenda. We are privileged to have with us  
6 today our co-chairman, the Secretary of the Interior,  
7 Mr. Thomas S. Kleppe.

8 This morning we will consider the draft "Enhanced  
9 Oil Recovery Report" mailed to you in late October. We will  
10 hear a status report on the work of the Future Energy Prospects  
11 Committee and we have several administrative matters to take  
12 care of.

13 To proceed quickly with the agenda items, we will  
14 dispense with the calling of the roll. The check-in at the  
15 door at the back of the auditorium will serve as the official  
16 attendance list for this meeting.

17 If you did not check in with one of the staff  
18 members as you entered, please do so before you leave this  
19 morning.

20 Now, before we proceed further, I would like to  
21 introduce the gentleman at the head table.

22 On my far left is Mr. Robert Sharbaugh, Chairman of  
23 the Committee on Future Energy Prospects.

24 Next to him -- or, more factually, coming down the  
25 aisle taking off his coat -- is Mr. H. J. Bill Haynes, who is

1 Chairman of the Committee on Enhanced Recovery Techniques for  
2 Oil and Gas in the United States.

3 On my immediate left is Collis Chandler, vice-  
4 chairman of the Council.

5 On my far right is Mr. Kenneth E. Belieu, executive  
6 director of the Council.

7 Then Jack Abernathy, chairman of the Finance  
8 Committee.

9 Next to him is Bill Fisher, Assistant Secretary of  
10 the Interior for Energy and Minerals.

11 And the gentleman on my immediate right we'll  
12 introduce in just a few moments.

13 Now, Dr. Fisher, would you please introduce the  
14 council members appointed since our meeting in March?

15 DR. FISHER: It is my pleasure, Mr. Chairman.

16 Let me read the names of those that are here. We  
17 have some of the new members that have been appointed since  
18 last March. If they are present, if they would stand, just  
19 for a moment.

20 John F. Bookout, president, Shell Oil Company.

21 Brant Calkin, president, Sierra Club.

22 Peter Flawn, president of the University of Texas,  
23 San Antonio.

24 Andrew K. Fraser, president, National Tank Truck  
25 Carriers, Incorporated.

1 John R. Hall, Chairman of the Board, National  
2 Petroleum Refiners Association.

3 George A. Helland, President, Petroleum Equipment  
4 Suppliers Association.

5 Randall, Chairman and Chief Executive Officer,  
6 Exxon Company, U.S.A.

7 Ashley H. Priddy, Chairman and President, Sabine  
8 Royalty Corporation.

9 Arthur R. Seder, Jr., President, American Natural  
10 Resources Company.

11 E. L. Shannon, Jr., President, Western Oil and Gas  
12 Association.

13 Frank Wood, Jr., Chairman of the Board, American  
14 Petroleum Refiners Association.

15 Those are the new members, Mr. Chairman.

16 CHAIRMAN SWEARINGEN: Thank you very much,  
17 Dr. Fisher and let me offer a very warm welcome to all of you  
18 new members also.

19 It is now my pleasure to turn to our distinguished  
20 co-chairman, the Secretary of the Interior, the Honorable  
21 Thomas S. Kleppe.

22 Secretary Kleppe.

23 SECRETARY KLEPPE: Good morning, everybody and  
24 thank you very much, Chairman John.

25 It is good to see you up so bright and early and

1 bushy-tailed and even though there are a few absentees, I am  
2 sure that you will be able to get this thing going and they  
3 will catch up.

4 I look upon it as an opportunity this morning to,  
5 hopefully review a few things with you that most of you pro-  
6 bably heard me say before. Most of you are probably very aware  
7 of what these items are, but I do believe that they are worth  
8 a little moment for review right now.

9 I recall last spring when I visited with you at  
10 your spring meeting, that I fashioned some comments around a  
11 quote by Charles Dickens and that quote was that, "It is both  
12 the best of times and the worst of times."

13 I think I expressed some optimism about that  
14 comment and the connection with the mandate that the President  
15 gave me when he asked me to take this job, and that was that  
16 to achieve energy production and yet protect our quality of  
17 life, the balanced approach, that this is something that we had  
18 to do.

19 Well, during these months since that meeting, I  
20 can tell you that I have literally travelled tens of thousands --  
21 and I can almost tell you -- over 100,000 miles just in that  
22 period of time, making hundreds of speeches all the way from  
23 coast-to-coast, north, south, east, west and my message has  
24 been loud and clear that these are the worst of times because  
25 we have got an energy crisis.

1           It is so hard, somehow or another, to get across to  
2 the rank and file of American people that we have got a problem  
3 when there are no lines at the gas stations and no other  
4 difficulties occurring; when you turn the switch on the lights  
5 go on and so forth.

6           And yet, we read now winter is upon us and it is  
7 getting cold in some places and the natural gas demand is only  
8 going to be partly met and depending upon what happens the rest  
9 of this winter, it all falls into a pattern of difficulty.

10           But even more so than that, it is the dependence  
11 that we have on sources not subject to our control that, in my  
12 judgment, create the crisis for us and that is serious.

13           It is strange to me that I was talking with some  
14 people in the new group that will be coming in shortly about  
15 this very situation and what it is that we have been trying to  
16 do in the Department of the Interior in the areas of energy and  
17 one of these persons said to another person who said to me --  
18 now, that is a little indirect but it will suffice -- why hasn't  
19 he said these things before?

20           Well, you know, I almost feel breathless because  
21 most assuredly we get minimum publicity out of anything of that  
22 kind from Washington but out in the field there has been a great  
23 deal of publicity about this message of our problem so sooner  
24 or later it is going to catch up but it is incumbent upon you  
25 and us to know what the circumstances are so that we can do the



1 best we can to try to offset it so it doesn't hit us so badly.

2 But now, that is the worst of our problems.

3 The best of our problems are that we are not a  
4 helpless giant of a nation. We know how to do it. We do have  
5 considerable resources at our command but what we lack and what  
6 we have not done is the American will to get at it.

7 It has got to be done and of course, the dilemma  
8 increases as we think about another OPEC meeting that is either  
9 underway now or going to start pretty soon and they are going  
10 to raise the price again.

11 You know, we spent \$3 billion a year for our  
12 foreign oil in 1970 and now we are spending \$3 billion a month  
13 and it is going up. Our percentage of import now is running  
14 something in excess of 40 percent. It is probably 42 or 44.

15 Our domestic production, as you know, is constantly  
16 going down and Prudhoe Bay is not a panacea.

17 Now, that is a pretty total statement when you just  
18 look at it in its own context. A lot

19 A lot of people say to me, "What is going to be the  
20 energy approach after January 20th?"

21 Well, I am sorry to say I don't know. You'll have  
22 to ask somebody else.

23 In any event, let me tell you that between now and  
24 then I have asked our people to function as we believe that we  
25 are mandated to function by the American people. I have asked

1 our people not to make any decisions for political purposes or  
2 political maliciousness whatsoever, but not to run away from  
3 action and decisions that are ours to make for the good of the  
4 nation.

5 What I am really saying is, that the nation cannot  
6 afford lame ducks and we are not going to function in here like  
7 lame ducks in this department, particularly in the areas of  
8 energy and the environment. There is too much that has to be  
9 done and irrespective of some of the warnings we receive from  
10 Congress -- "Don't do anything" -- we are going to do what is  
11 our responsibility anyway.

12 We think that is only fair and right.

13 What I want to say to you is that I do stand here  
14 feeling a little bit of pride in what we have been able to do  
15 these last 14 months. I think we have gained some momentum. I  
16 think we have gained some progress.

17 I believe that our team can say to you that that is  
18 a legacy that here is in place and it is ready to move.

19 And we have dealt, I think, as honorably as we can  
20 with the problems of our energy and the problems of our  
21 environment and I am so convinced, ladies and gentlemen, that  
22 we have got to approach it on a balanced basis, that we just  
23 have to consider all of the problems that are inherent in both  
24 the production aspect of our energy problems and yet the  
25 environmental problems involved.

1 That is the New Day part of it.

2 Several significant advances have been made. One  
3 is, as you know, that we have initiated a leasing program in  
4 frontier areas in the Outer Continental Shelf and the reports  
5 that you get on this are extremely encouraging.

6 For example, the latest OCS sale along the east  
7 coast, which is the largest consuming area of the United States,  
8 where they consumed about 6 billion, 6 million barrels of oil a  
9 day last year and almost half of it is imported.

10 Well, if a major find is at all in the cards, this  
11 would be a very good place to find it and we have been highly  
12 encouraged about the withdrawal of the State of New York from  
13 the lawsuit against us to negate the leases up there because I  
14 believe that they understand that we will work with them in  
15 taking care of the environmental problems along the coast and  
16 I called the Governor of New York to congratulate him and,  
17 having served with him in Congress, we had a delightful visit,  
18 to say the least.

19 He said, "Tom," he says, "we realize we can't beat  
20 you. We are going to join you."

21 Well, that is a good point because we were trying  
22 to do it right. We have done it right and the nation needs it  
23 and what it can do for the economy of that area, what it can  
24 do for the energy problem of our nation is -- yes, it is a few  
25 years away but unless we do something now, nothing will be

1 around the corner for us a few years away.

2 What we have to do in OCS is increase our 850,000  
3 barrels a day up to 4 or 5 million by 1980.

4 In the area of OCS our timetable was to have six  
5 frontier sales a year between 1975 and 1978. That was to be  
6 24 sales.

7 Well, we haven't and we won't meet that schedule.

8 Well, because of lawsuits. We have had 11 already.  
9 And because of the extra time it takes to prepare the environ-  
10 mental reports and to do it right and it is absolutely mandatory  
11 that we do it right.

12 We cannot lose court cases. We cannot -- the nation  
13 absolutely cannot afford to be tied up in court and lose  
14 because of the critical aspects of the energy approach to the  
15 area of the Outer Continental Shelf.

16 What the future holds in OCS, who knows? But we  
17 have a schedule of lease sales, some of them frontier areas,  
18 others additional areas in the Gulf of Mexico and adjoining  
19 the areas already under exploration.

20 I don't have to tell you, I think, that the sales  
21 that we have made are not a panacea. They are not going to  
22 answer all of our energy problems but they most assuredly could  
23 help change that trend of decrease in domestic production  
24 versus consumption.

25 When we look at Alaska, a lot of people think, well,

1 our problems are over forever and a day.

2 No, there again, we can stop and change the trend  
3 of the decrease that has been going on since 1970 but it is  
4 not the answer to all the problems. Because of the continuity  
5 of the decrease, we need a Prudhoe Bay field every two and a  
6 half years just to stay even.

7 Consequently, our objectivity and our problems  
8 ahead of us are very serious.

9 What else have we done?

10 Well, we have tried to set forth a comprehensive  
11 program of federal coal leasing and reclamation and that is in  
12 place. That has been like pulling teeth but we do have it in  
13 place.

14 You are familiar with the transfer of the Navy  
15 Four PET-For program? That is progressing very smoothly, thanks a  
16 great deal to Bill Fisher and his people.

17 As you know, Congress did approve a system for  
18 selecting a pipeline route for gas from Alaska and that should  
19 eliminate some time when they get down to making this choice  
20 between the President and Congress.

21 And then, this very important project, the Trans-  
22 Alaska Pipeline; as you undoubtedly read in the paper the other  
23 day they laid the last piece of pipe and they are still talking  
24 about being on schedule and I don't -- I probably don't have to  
25 tell anybody in this room, but that is the mark of the ingenuity

1 of the American business and American industry, the kind of a  
2 job that has been done up there under exceedingly harassing  
3 problems and situations and I think that they and all related  
4 to it ought to feel proud.

5         Maybe there is one thing that I regret more than  
6 anything else by not being around here a little longer and  
7 that is, the opportunity and the privilege to sign off on the  
8 Alieska Pipeline as one Cabinet officer.

9         If I ever saw anything that really represented a  
10 job well-done and under tough circumstances, I would say that  
11 is it. It is going to be without a question of a doubt the  
12 most environmentally-sound and bullet-proof pipeline ever  
13 constructed in the history of the petroleum industry or any-  
14 thing else.

15         Maybe that is the way it should have been. At  
16 least, that is the way it was and that is the way it is.

17         But as we look at our energy areas, we don't have  
18 many options. We have got an economy right now which depends  
19 on petroleum for three-quarters of its energy and we just can't  
20 change that overnight. Somehow or another that is a very hard  
21 thing to communicate but it is true.

22         It is absolutely essential that we continue to seek  
23 absolute maximum production of petroleum until the time comes  
24 when we can substitute other forms of energy, until we can find  
25 ways to conserve more of the energy that we have.

1 But that isn't around the corner and consequently  
2 it behooves us to do the best we can with what we have got and  
3 this is where you come in. This is where this Council comes  
4 in. You have served a very important role in providing advice  
5 and information during the past 30 years to nine of my pre-  
6 decessors.

7 You have come up with more than 200 study reports  
8 to provide information and knowledge that is absolutely vital  
9 to the decision-making process in this office in this job.

10 These reports are exceedingly appreciated and I  
11 know that they will continue to be available to the next  
12 Secretary and therefore, I am pleased to tell you that the  
13 National Petroleum Council charter has been renewed for another  
14 two years.

15 The present charter two-year term ends this year  
16 and its renewal has been found to be totally appropriate and  
17 in the public interest and therefore, we have done so.

18 We have revised the membership to coincide with the  
19 charter. Reappointment and appointment letters are going to  
20 go out very soon.

21 Of the present 150 members -- and maybe some of  
22 you do not know this -- 80 percent represent various sectors  
23 of the industry; 20 percent provide other viewpoints, such as  
24 academic, environmental, consumer, legal, financial, research  
25 and state government.

1           Of the industry members, 20 percent are integrated  
2 oil companies, 25 percent are independent producers, 13 percent  
3 are independent marketers and/or refiners, 10 percent are  
4 natural gas companies, 7 percent are drilling contractors and  
5 suppliers, 4 percent are consultants and 2 percent are petro-  
6 leum transportation.

7           We believe that this truly represents a cross-  
8 section of the industry and these companies have operations in  
9 all 50 states of the nation but there is some greater concentra-  
10 tion in the oil-producing states as I am sure you can understand.

11           This balance that I have just recited to you does  
12 meet the requirements of the Federal Advisory Committee Act  
13 which applies to the National Petroleum Council.

14           The non-industry members have been presenting view-  
15 points and very constructively, I am advised, that are not  
16 normally available within the industry and they have been found  
17 to be particularly helpful in some of these studies and that  
18 is the way it should be.

19           We believe that the present balance has served us  
20 well and we do not plan on making any significant changes. I  
21 am looking forward to receiving your report on this enhanced  
22 oil recovery which, I am told, is an important step in bringing  
23 this complex but promising technology and perspective into this  
24 proper perspective.

25           Our original request called for study of this



1 enhanced oil recovery -- enhanced recovery of both oil and gas  
2 but I understand that there are fundamental distinctions  
3 between oil and gas recoveries.

4 The study, of course, was focused on oil and it  
5 brought the best experience and technology in to bear on that  
6 subject.

7 However, I would say to you, Mr. Chairman and all  
8 the rest of your members, that I am hopeful that at some future  
9 effort by the Council can be directed to a comparable analysis  
10 of gas. It seems to me that that would be worthwhile informa-  
11 tion for all concerned as well.

12 I am requesting that the Council undertake another  
13 study. I am going to send a letter to the chairman requesting  
14 a study of the vulnerabilities of the petroleum logistics  
15 system in this nation.

16 It kind of pains me to do this because I had hoped  
17 that it would not be necessary but let's face it, the facts  
18 dictate that it is a must.

19 The Council's report here would be expected to  
20 recommend how the oil and gas industry could continue to provide  
21 the very basic and the very essential services under extreme  
22 emergency conditions and what actions might be taken by the  
23 industry and by government to reduce current vulnerabilities.

24 This would also include a reassessment of existing  
25 federal and other energy emergency preparedness programs so we

1 look forward to that as being something exceedingly important.

2 Now, let me say as I get ready to sit down, thank  
3 you -- personally, for all of us in the Department, for the  
4 President, for the country.

5 Thank you for your service, for your dedication,  
6 for the time that you give. That is a sincere thought on our  
7 part.

8 And then I want to, since I opened with a comment  
9 from our friend, Charles Dickens, I ought to close with one  
10 because of the season of the year when in his A Christmas Carol  
11 Tiny Tim said,

12 "God bless us, every one."

13 Thank you.

14 [Applause.]

15 CHAIRMAN SWEARINGEN: Mr. Secretary, thank you  
16 very much for those remarks.

17 Let me, on this occasion, express my appreciation  
18 to you and to your associates for the fine cooperation we have  
19 had between the Council and your office in the last two years  
20 that I have been in this particular job and I'll tell you that  
21 it has been a very rewarding experience for all of us who have  
22 taken part in it and we are sorry to see you go.

23 SECRETARY KLEPP: Thank you.

24 CHAIRMAN SWEARINGEN: Being a lame duck myself, or  
25 almost a lame duck, I understand your feelings.

1           Would you mind answering some questions if any of  
2 the members of the Council have some questions they would like  
3 to put to you?

4           SECRETARY KLEPPE: If anyone has any, I'll try it  
5 because I have got good support right here.

6           CHAIRMAN SWEARINGEN: Does anyone have any questions  
7 you would like to put to Secretary Kleppe this morning?

8           [No response.]

9           CHAIRMAN SWEARINGEN: Well, you answered all their  
10 questions in your prepared remarks. Thank you very much, Tom.  
11 We appreciate your coming.

12          SECRETARY KLEPPE: I'll be around in case anybody  
13 wants me.

14          CHAIRMAN SWEARINGEN: All right.

15          As I mentioned earlier, one of our principal tasks  
16 this morning is to consider the draft report on "Enhanced Oil  
17 Recovery" you have before you. Due to the technical nature of  
18 the report, I felt it was important to give you as much time as  
19 possible for a thorough review of the draft.

20          For that reason, the Coordinating Committee draft  
21 was mailed to you on October 29 and your comments were consi-  
22 dered by the main committee at its meeting on December 1.

23          Bill Haynes, chairman of the main committee will  
24 now present the report to you.                   Bill.

25          MR. HAYNES: Thank you very much, Mr. Chairman.

1           The Committee on Enhanced Recovery Techniques for  
2 Oil and Gas in the United States began its study just about a  
3 year ago. We now have completed our report and this morning I  
4 plan to describe the study briefly and recommend that the  
5 National Petroleum Council adopt the report.

6           The study was requested by Assistant Secretary of  
7 the Interior, Jack W. Carlson in his letter of March 18, 1975  
8 to Mr. Swearingen, National Petroleum Council Chairman.

9           He asked the National Petroleum Council -- and I  
10 quote -- to "Assess the state-of-the-art of enhanced recovery  
11 for oil and gas from known oil and gas reserves, appraise the  
12 probable ranges of volumetric outcomes based on alternative  
13 economic conditions and recommend how public policy can improve  
14 the outlook."

15           Now, the NPC agreed to undertake the study and with  
16 approval of the Department of Interior, established the  
17 Committee on Enhanced Recovery Techniques for Oil and Gas in  
18 the United States.

19           The Committee met on December 15 last year and agreed  
20 upon a study plan. A Coordinating Subcommittee, an Economic  
21 Conditions Taskgroup and a Technology Taskgroup were formed to  
22 assist the committee in the study.

23           Detailed studies began early this year and the  
24 status of the work was reported to you at the NPC meeting last  
25 March 31.

1 By fall, the writing of the report had begun and  
2 on October 29, a draft report was mailed to you for review and  
3 comment.

4 Now, we received a gratifying number of comments  
5 with some very constructive suggestions for improvements to the  
6 draft report and these suggestions were considered at a  
7 committee meeting on December 1 and the proposed final report  
8 that you have today was then prepared.

9 Now, as Ken BeLieu noted in his letter to you on  
10 December 3, the majority of the comments we received indicated  
11 that the October 29 draft report was an excellent response to  
12 the request from the Department of the Interior.

13 Based upon the comments, a number of editorial  
14 changes were made throughout the report and several paragraphs  
15 were reworded where clarifications were suggested.

16 The most significant changes, however, were made  
17 in Chapter IV, Policy Considerations. The comments on Chapter  
18 IV centered on the section entitled "Economic Incentives."

19 This section was believed to contain discussion  
20 of topics that were beyond the scope of this study of enhanced  
21 recovery.

22 The Committee considered that section at length and  
23 agreed upon the greatly-reduced discussion that is shown in the  
24 proposed final report.

25 Now, the Committee did not estimate potential

1 enhanced recovery from producing gas fields since the opportunity  
2 for improving total gas recovery through non-conventional or  
3 enhanced recovery processes in these fields is limited.

4           The major potential for non-conventional gas  
5 recovery is from low permeability presently uneconomic reser-  
6 voirs. The magnitude of this potential is unknown but may  
7 represent a substantial contribution to the nation's future  
8 energy supply.

9           However, very little information is available  
10 specifying reservoir volume, location, reservoir geologic  
11 characteristics or other data required to analyze potential  
12 recovery and producing rates.

13           Therefore, estimates of possible enhanced gas  
14 recovery were not made.

15           I would now like to describe the report very  
16 briefly, starting with some definitions and the bases used in  
17 the study.

18           The term "enhanced recovery" should, I think, be  
19 defined first.

20           Now, in the broadest meaning, enhanced oil recovery  
21 or EOR refers to any method used to recover more crude oil from  
22 a reservoir than would be obtained by primary recovery.

23           In primary recovery, natural forces such as gas or  
24 liquid expansion or influx of water from water-bearing zones  
25 are used to produce the oil.

1           Conventional secondary recovery methods such as  
2 water flooding are considered as enhanced recovery methods  
3 under the broadest definitions.

4           For this study, however, we considered the additional  
5 recovery of oil from a petroleum reservoir over that which can  
6 be recovered economically by primary or conventional secondary  
7 methods.

8           Three classifications of EOR methods have shown  
9 promise and are considered in the report, namely, chemical  
10 flooding, carbon dioxide miscible flooding and thermal methods.

11           Now, a number of bases were established for the  
12 study and these are illustrated on the first slide.

13           We included known U.S. oil fields, Recovery from  
14 possible future discoveries was not included.

15           Constant 1976 dollars were used for prices and costs.  
16 This term refers to the purchasing power of the U.S. dollar in  
17 1976 without consideration of possible future variations in  
18 currency value.

19           Three minimum discounted cash flow rates of return,  
20 10, 15 and 20 percent were used as criteria for evaluating each  
21 reservoir.

22           Now, these rates were used in the analysis only as  
23 economic streams and not as expectation for average results.

24           For the five oil price cases, prices were assumed  
25 to be effective immediately and to remain constant throughout

1 the 1976 to 2000 period.

2 Prices used were \$5, \$10, \$15, \$20 and \$25 per  
3 barrel in constant 1976 dollars.

4 The calculations were made for two tax cases which  
5 represent two possible interpretations of current law as of  
6 July, 1976.

7 The technical knowledge of enhanced recovery methods  
8 was assumed to evolve during the 1976-2000 period but no  
9 technological break-throughs were assumed to occur.

10 Throughout the study environmental effects of  
11 enhanced recovery processes were given full consideration.

12 Now I would like to show the principal results of  
13 the study.

14 The results were calculated from base cases for  
15 each of the EOR processes. The term "base case" refers solely  
16 to best estimates of process performance and associated process  
17 costs and implies no judgment regarding future oil prices,  
18 tax cases or rate of return requirements.

19 A minimum rate of return criterion of 10 percent  
20 and the moderate tax case have been used in these charts.

21 The first chart shows incremental ultimate  
22 recovery for all processes. Recovery is sensitive to oil  
23 price increasing from less than 3 billion barrels at \$5 per  
24 barrel to about 24 billion barrels at \$25 per barrel.

25 Could I have the next slide, please?



1           Also, the potential producing rate is sensitive to  
2 oil price as shown on this chart. Peak production rate at most  
3 oil prices is projected to occur in the 1990's.

4           In 1995 for example, the production rate ranges from  
5 about a quarter of a million barrels per day at \$5 per barrel  
6 to 3.5 million barrels per day at \$25 per barrel.

7           The technical uncertainties in most enhanced  
8 recovery processes is great and estimates of ultimate recovery  
9 and producing rate can be significantly in error.

10           The next chart illustrates the uncertainty in  
11 incremental ultimate recovery.

12           The base case on this chart is the same base case  
13 shown on the first chart for all processes.

14           The upper bound was obtained by assuming that the  
15 processes perform much better than expected in the base case and  
16 the lower bound by assuming that the processes perform much  
17 poorer than expected in the base case.

18           At \$15 per barrel, the range is from 7 billion to  
19 27 billion barrels compared to a base case estimate of 13 billion  
20 barrels.

21           Now, the uncertainty in producing rate at any point  
22 in time is larger than the uncertainty and ultimate recovery  
23 because additional assumptions must be made for logistical  
24 factors.

25           The next chart shows this uncertainty for an oil

1 price of \$15 per barrel.

2           The base case is the same as shown in the second  
3 chart and the upper and lower bounds illustrate better than  
4 expected and poorer than expected process performance.

5           In 1995 the rate ranges from about three-quarters  
6 of a million barrels per day to about 3.5 million barrels per  
7 day with a base case of 1.5 million barrels per day.

8           Now, the next chart illustrates the potential  
9 contributions of enhanced recovery processes relative to U.S.  
10 production. It shows several results from the second chart  
11 superimposed upon a calculated declining curve of the remaining  
12 primary and secondary production of current U.S. proved  
13 reserves.

14           The middle line in the yellow-colored area is for  
15 the base case at \$15 per barrel and the upper line is for the  
16 base case at \$25 per barrel.

17           This chart illustrates the first of the three con-  
18 clusions from the study which is, enhanced recovery processes  
19 if technically successful and broadly applied could have a  
20 significant impact on all production from known U.S. reservoirs  
21 during the years 1985 to 2000.

22           The second conclusion is that the potential of  
23 enhanced recovery processes is uncertain at this time, that  
24 technical uncertainties still are great and industry needs to  
25 conduct further research and field testing to improve the

1 estimates of volumes and rates.

2 The third conclusion is that incremental ultimate  
3 recovery and potential producing rate for enhanced recovery are  
4 highly dependent upon oil price and other economic factors.

5 A report like this on complex technical processes  
6 could not be assembled without the contributions of time and  
7 professional skill by many people.

8 My committee would like to acknowledge the outstanding  
9 work of the subcommittee and the task groups as well as the  
10 assistance of the Interior Department staff and the NPC staff.

11 I'd like to pay special tribute to Larry Thrasher  
12 with my company who was chairman of the subcommittee, to  
13 Mr. Ted Eck, with Standard of Indiana, who headed up the  
14 Economics Task Force and Dr. Marvin Katz with Arco, who headed  
15 up the Technology Task Force.

16 I'd like also to mention that more than 50 people  
17 have contributed of their time and their talent to making this  
18 study and also we were assisted by over 30 companies or  
19 organizations in performing this study.

20 So I would like to give my personal thanks to all  
21 of them for their very fine efforts and a very thorough report.

22 In conclusion, Mr. Chairman, the Committee believes  
23 that this proposed report is an excellent one and is a suitable  
24 response to the Secretary's request.

25 The Committee recommends that it be adopted by the

1 National Petroleum Council, subject, of course, to final  
2 editing. And I so move its adoption.

3 CHAIRMAN SWEARINGEN: Thank you very much, Mr. Haynes.

4 Bill, would you remain here in case there are any  
5 questions anyone would like to put to you about what is in the  
6 report or what is not in the report?

7 MR. HAYNES: I'd be delighted, John. I also have  
8 Mr. Thrasher sitting down here in the front row in case the  
9 questions get a bit too technical.

10 CHAIRMAN SWEARINGEN: Let's ask Mr. Thrasher to  
11 stand so he can be recognized.

12 [Mr. Thrasher stands. Applause.]

13 CHAIRMAN SWEARINGEN: Does anyone have any questions  
14 they would like to put to Mr. Haynes about this report?

15 In the back?

16 VOICE FROM THE FLOOR: How about tant expansion,  
17 if possible, upon the two tax cases that were considered in the  
18 preparation of the report?

19 MR. HAYNES: Well, those were simply an assumption  
20 on the one hand that certain chemical costs would be expensed,  
21 I mean, for example.

22 And in the other case, that the chemical costs  
23 would have to be capitalized. That is one example of the two  
24 cases as they apply to this study.

25 Isn't that correct, Mr. Thrasher?

1 MR. THRASHER: Yes.

2 CHAIRMAN SWEARINGEN: Are there any other questions?

3 [No response.]

4 If not, I would like to put this to a vote.

5 Bill, you made a motion to approve this report. Is  
6 there a second to this motion?

7 [The motion is seconded.]

8 Will those in favor please signify by saying "Aye?"

9 [There is a chorus of Ayes.]

10 Opposed?

11 [There is no opposition.]

12 [The motion is carried unanimously.]

13 Thank you very much.

14 And, Bill, we really do appreciate the efforts that  
15 you and your committee exerted to bring forth this report. I  
16 think it is a compliment both to you and to the Council.

17 Now, next on our agenda is a progress report from  
18 the Committee on Future Energy Prospects. Bob Sharbaugh is the  
19 Chairman of this Committee and is here to bring you up to date  
20 on the work of this group.

21 Bob Sharbaugh.

22 MR. SHARBAUGH: Thank you, John.

23 It is a pleasure to be here today on behalf of the  
24 Committee on Future Energy Prospects to report to the Council  
25 on the progress they have been making.

First let me briefly review the origins of the

1 study for the benefit of those of you who were not at the  
2 meeting of the Council last March.

3 By letter dated August 5th of 1975, Assistant  
4 Secretary of the Interior Jack Carlson requested the Council  
5 to update its 1972 study that had been titled "U.S. Energy  
6 Outlook."

7 The Agenda Committee of the Council met that same  
8 day and made the recommendation that the Council undertake the  
9 study with the stipulation that the Council review an outline  
10 of the study before the study were begun.

11 At the August, 1975 meeting of the Council, that  
12 recommendation of the Agenda Committee was unanimously  
13 accepted.

14 After conducting that stipulated review of an  
15 outline proposal, the Agenda Committee on March 31st of 1976  
16 reported to you its approval of the undertaking of the study.

17 During the course of the many meetings and  
18 discussions which had occurred between August of 1975 and  
19 March of 1976, the general emphasis of the study was changed  
20 from one of a strict update of the earlier Energy Outlook  
21 study to one of a broader, more general nature which could, in  
22 effect, provide a new appraisal of the energy outlook for the  
23 United States.

24 The Department of the Interior agreed with these  
25 changes and were in close consultation with us throughout these

1 deliberations. On the basis of those conclusions, the study  
2 now could best be viewed as generally a policy-oriented one  
3 rather than primarily a detailed statistical analysis and  
4 projection of energy supply and demand.

5 I don't by any means here mean to diminish the  
6 value and the impact and the hard work that is going into the  
7 creation of such statistical projections of supply and demand,  
8 both in the United States and worldwide supply but it is hoped  
9 that this study will point out to the Secretary the implica-  
10 tions and directions of government policy.

11 Further, we hope the study could give our Secretary  
12 the Council's analyses pro and con of the findings that are  
13 contained in other recent studies with particular attention  
14 being given to some of the differing underlying assumptions  
15 that have been made in the several studies that have emanated  
16 over the past few years.

17 The mechanism chosen for preparing those analyses  
18 are the writing of a number of papers, each on the various  
19 fuel forms. You have in your packets a list of some 23  
20 coincident and concurrent studies underway.

21 The authors of the papers of those studies are  
22 we  
23 members of my committee and/are thereby ensuring close  
24 coordination of their efforts.

25 Other members of our committee are preparing a  
number of papers on policy-oriented topics. You will see that

1 about the first 15 of those 23 could be better characterized  
2 as policy studies than as analytical studies.

3 Those papers will cover general relationships such  
4 as those between energy and employment, environment, the  
5 economy, government policies such as taxation, price control  
6 and research development and other areas such as research and  
7 development, capital availability and import dependency.

8 We expect to have the working drafts of these  
9 papers completed and ready for a general review by our  
10 committee during the early part of 1977.

11 After they are completed we will then be preparing  
12 a summary report that covers their content and begins to work  
13 on various sections of the outline with which we started.

14 The individual papers themselves will be used as a  
15 volume of Appendices from which we will draw a summary report  
16 and through which the Secretary will be given all of the back-  
17 ground documents of the Committee that led to that final report.

18 To assist the Committee in beginning this work in  
19 preparation of a summary report, we have established, beginning  
20 today, a Report Integration Subcommittee under the chairmanship  
21 of Dick Donaldson, Vice-president of Government and Industry  
22 Affairs of Sohio.

23 This small group will also be charged with  
24 identifying gaps that may be left between the papers and  
25 helping resolve conflicts of view that arise in our committee



1 around the content of those papers.

2 Finally, they will be recommending to the  
3 committee how, if at all, these papers will lead to a consensus  
4 projection of the energy outlook in the United States.

5 I will be calling the next meeting of our committee  
6 in mid-January. Tentatively we believe it can be held on the  
7 14th of January. We will be keeping you informed of our  
8 progress.

9 Our committee should be able to meet the spring,  
10 1977 deadline set by the Interior Department for the completion  
11 of this study.

12 I'll be sending draft reports on the substance of  
13 our work and on the conclusions of the committee in time for  
14 deliberations by you as members of the NPC before we recommend  
15 to you the adoption of the final report.

16 In closing, I would like to thank those members of  
17 the Council who have been working with us on the study. They  
18 have put extensive time and resources into this project.

19 Well, I have followed the results of NPC studies  
20 for a number of years. It has been my first experience with  
21 the actual development of a report.

22 I have been extremely impressed with dedication of  
23 Council members in providing the best advice possible to the  
24 Secretary of the Interior in whatever talent, work and time it  
25 would take to get that work developed.

1 I have been equally impressed by the willingness of  
2 many individuals outside our Council membership to work on such  
3 a study and to work diligently at it.

4 At last count, roughly one-third of the over 100  
5 individuals who were directly working on this study are not  
6 affiliated with the oil and gas industry. I think such a broad  
7 representation will allow us to complete this ambitious project  
8 both in a timely fashion and with a balanced approach that can  
9 provide the Secretary of the Interior with the best possible  
10 response to the request we received from him in August of 1975.

11 Thank you, John, that completes the progress report  
12 on our committee and I would be pleased, too, to respond to  
13 questions if there are any on the report.

14 CHAIRMAN SWEARINGEN: Thank you, Bob, are there any  
15 questions?

16 [No response.]

17 Well, if not, we will all look forward eagerly,  
18 Bob, to the completion of your report which I think will be a  
19 very important one as far as the Council is concerned.

20 I would like now to turn to the Executive Director  
21 of the Council for a report on the status of Council business.

22 Mr. Ken BeLieu.

23 MR. BE LIEU: Thank you, Mr. Chairman.

24 I would be amiss if I did not take the opportunity  
25 here to thank the members of the Council, particularly

1 Bob Sharbaugh and Bill Haynes and the people that worked on  
2 the reports because it is always a pleasure and a privilege to  
3 be associated with those who are dedicated and who well know  
4 their business.

5 I don't have much for you today.

6 Last time I reported on the status of the lawsuit.  
7 I can bring you up-to-date such as it is.

8 At the last Council meeting I indicated that  
9 District Judge Pratt dismissed the complaint brought by  
10 Senators Metcalfe and Brown which sought to enjoin the Council's  
11 activities because of alleged non-compliance with the Federal  
12 Advisory Committee Act.

13 These Plaintiffs alleged in essence the Council is  
14 not fairly balanced or reasonably representative and that its  
15 advice is inappropriately influenced by special interests.

16 Judge Pratt held that neither Plaintiff had  
17 standing to bring the lawsuit.

18 Then on September 15 of this year, the United States  
19 Court of Appeals for the District of Columbia, a three-judge  
20 panel, heard oral argument in this case which focused on  
21 whether the Senator and Mr. Brown had standing to make such a  
22 complaint.

23 Following the oral argument, the court took the  
24 case under advisement.

25 Now, it is not possible to estimate when a

1 decision may be expected, although normally when the courts  
2 issue an opinion it may be several months following the date of  
3 oral argument.

4 So that brings us up to date, such as it is, on the  
5 law case.

6 Mr. Chairman, I would also be amiss if I did not  
7 thank the staff of the Council for their work this year.

8 It has been a privilege to work with you, too.

9 CHAIRMAN SWEARINGEN: Thank you very much, Ken.

10 I would like now to call on Jack Abernathy, Chair-  
11 man of the Finance Committee. Jack.

12 MR. ABERNATHY: Thank you, Mr. Chairman.

13 Your Finance Committee met yesterday on the 8th of  
14 December as the last in the series of several formal and  
15 informal meetings during the past year.

16 The full dress committee reviewed the administrative  
17 and financial procedures of the Council and I am pleased to  
18 make this report today for two reasons, the

19 The first one, of course, is after five years in the  
20 rather hot seat as Chairman of the Committee, this report will  
21 be my swan song, Mr. Chairman. I am also a lame duck along  
22 with you,

23 I anticipate the new Chairman will appoint my  
24 successor to this position and actually, of course, I will be  
25 glad to give him any advice or support I can.

1           Now, the second is -- the reason I am glad to make  
2 this report is that the financial condition of the Council is  
3 and continues excellent.

4           In our deliberations yesterday the Committee  
5 thoroughly reviewed the Council's administrative procedures,  
6 its staff organization, its expenditures for the first six  
7 months of the fiscal year 1977 -- 1976/77 and its current  
8 financial investment program of the funds available for  
9 temporary investment.

10           We find in sequence that the administrative  
11 procedures are in accord with sound business practice. We  
12 had a meeting -- the Finance Committee did -- had a meeting  
13 with the auditors. We reviewed the management letter of the  
14 auditing firm and we found that great progress had been made.

15           The auditing firm gave us a clean bill of health.

16           It was very gratifying.

17           Mr. BeLieu continues to run a tight ship. Expendi-  
18 tures are will within authorized budget limits.

19           The staff has been trimmed down to a lean, effective  
20 and professional unit. In fact, it has been reduced from 32 in  
21 October of '74 to 19 now.

22           Reserve funds are being invested so as to earn  
23 maximum interest for the Council benefit.

24           Now, we do have one administrative problem. It is  
25 a minor one but one which relates to something which had been

1 said earlier by the Secretary.

2           Currently, our charter and membership appointments  
3 are renewed on a calendar year basis. That is, from the first  
4 of January till the 31st of December.

5           However, historically, our finances have been -- up  
6 to now -- have been conducted on a fiscal year basis from the  
7 first of January till the 30th of June the following year.

8           Now, it seems desirable to have the charter, the  
9 membership and the financial periods in coincidence timewise.  
10 Therefore, Mr. Chairman, the Finance Committee recommends that  
11 effective January 1st, 1977, the Council's financial period be  
12 changed to a calendar year basis rather than a fiscal year  
13 basis than as has historically been followed.

14           Now, since the current fiscal year overlaps the  
15 first six months of the calendar year, we will have to generate  
16 additional funds to continue operations during the second half  
17 of calendar year 1977 -- that is, July through December.

18           In other words, our funds were raised for the period  
19 ending June 30th.

20           At this time we really can't forecast accurately --  
21 we don't know what the new administration will wish or anything  
22 of that nature. We have no way of forecasting accurately what  
23 future requirements will be placed on the Council during this  
24 six months' period -- I mean, during the six months beginning  
25 July 1st, 1977.

1           However, we have given considerable thought to it  
2 and we hope, a careful analysis of current and past expenditures.  
3 The Committee, using its best judgment, recommends using  
4 adoption of a six months' extension to the currently-approved  
5 budget which would amount to \$544,000. That would be to cover  
6 the period July 1st-December 30th with the understanding on the  
7 part of yourself and the Council and others that that is a  
8 controlled estimate.

9           We really don't know what to anticipate. We do  
10 know that that will take care of the ongoing expenditures, the  
11 fixed expenditures of the Council, the overhead, the adminis-  
12 tration and all and leave enough of a margin to handle a  
13 reasonable workload in that period.

14           This amount, when added to the balance of funds  
15 remaining in the second half of the fiscal year budget would  
16 result in a calendar year '77 budget of \$1million, 100,000 if  
17 we were starting over on January 1st.

18           Now, this represents a reduction of some \$70,000  
19 from the \$1 million 170,000 budget which was approved for the  
20 current fiscal year.

21           It also represents -- it is about \$200,000 less than  
22 the \$1,3 million spent a couple of years ago.

23           Mr. Chairman, the Finance Committee recommends that  
24 the membership approve a \$544,000 extension for the currently-  
25 approved fiscal year 1977 budget so as to enable the Council to

1 change its financial period to a calendar year basis.

2 I therefore move that the Council adopt this report.

3 I might make one more comment before I am seated.

4 It is not the intention of the Finance Committee,

5 so far as I understand it, to solicit funds for this third

6 half of the current fiscal year -- if we can put it that way --

7 at this time. That solicitation will come along in May or June

8 and the Finance Committee at that time may find it necessary to

9 recommend to you some, we hope, relatively minor adjustments in

10 this budget but this, at least, will get the ball rolling

11 towards a calendar year basis rather than a fiscal year basis

12 so, again, I move that you, the Council, adopt this report along

13 with the recommendation of a \$544,000 budget for the second

14 half of calendar year 1977.

15 Thank you.

16 CHAIRMAN SWEARINGEN: Thank you very much,

17 Mr. Abernathy.

18 Is there a second to the motion?

19 [The motion is seconded.]

20 Is there any question or discussion of this

21 recommendation?

22 If not, those in favor of adopting the recommendation

23 of the Finance Committee will please signify by saying Aye.

24 [There is a chorus of Ayes.]

25 Opposed?



1 [There is no opposition and the motion is carried  
2 unanimously]

3 Carried.

4 Thank you very much.

5 Jack, let me compliment you and your committee for  
6 the really great work that you have done in supervising the  
7 finances of the Council and in saying so, I don't want to  
8 exclude the work that was done by Mr. BeLieu and his associates  
9 and members of the staff.

10 I think together you have done a great job and I  
11 don't know whether it slipped past you in the audience or not  
12 but Jack did remind you that we, in this time of inflation, have  
13 been able to cut the budget of the expenditures of the Council  
14 by some \$200,000 over the last several years on an annual  
15 basis.

16 Now I would like to call on Carol M. Bennett,  
17 Chairman of the Nominating Committee who will propose for you  
18 consideration of the membership of the Agenda and the Appointment  
19 Committees as well as the officers of the Council for the  
20 calendar year 1977. Carol.

21 MR. BENNETT: Mr. Chairman, your Nominating Committee,  
22 composed of Jake Hamon, Frank Ikard, Dean McGee, Charlie Spahr  
23 and myself, in accordance with Article V of the Articles of  
24 Organization, recommend the following:

25 As Chairman, Collis P. Chandler, Jr.

1 As Vice-Chairman, Charles H. Murphy, Jr.

2 For the Agenda Committee, Carrol Bennett,

3 Maurice Granville, John Miller, Kenneth Montague, R.L. O'Shields,

4 Robert Sellers, Edgar Speer, Elvis J. Stahr and Rawleigh

5 Warner, Jr.

6 For the Appointment Committee, Howard Blauvelt,

7 Mary Hudson, George Jandacek, John M. Kelly, Thomas Kimball,

8 Harold McClure, Jr., John R. McMillan, W. F. Martin, John S.

9 Shaw, Jr. and Robert E. Yancy, with Harold E. Berg as chairman.

10 I don't know that I mentioned Bill Haynes as  
11 chairman of the Agenda Committee.

12 The terms of office of these individuals begin at  
13 the close of this session.

14 Mr. Chairman, this completes the report of the  
15 Nominating Committee and I move that the Council elect the  
16 full slate.

17 CHAIRMAN SWEARINGEN: All right, is there a second  
18 to these nominations?

19 [The motion is seconded.]

20 Is there any question or comment?

21 [No response.]

22 Is anybody unhappy about not being named to a  
23 committee?

24 [Laughter.]

25 If there is no question or discussion, may those in

1 favor of this recommendation please signify by saying Aye?

2 [There is a chorus of Ayes.]

3 Opposed?

4 [There is no opposition and the motion is carried  
5 unanimously.]

6 Carried.

7 And now I think it is appropriate to call on our  
8 newly-elected Chairman, Mr. Collis P. Chandler.

9 Collis.

10 [Applause.]

11 MR. CHANDLER: Thank you very much, John.

12 Gentlemen, you honor me.

13 Along with you, I am proud to play a part in the  
14 Council's work with our government. I'll do my best.

15 Thank you for your trust.

16 [Applause.]

17 CHAIRMAN SWERINGEN: And now ladies and gentlemen,  
18 if there is no further business to be brought before the  
19 Council this morning, the Chair will entertain a motion to  
20 adjourn.

21 MR. ABERNATHY: Mr. Chairman, just a minute.

22 I think we all ought to adjourn with a rising vote  
23 of thanks to our chairman. He has had a hard job and a tough  
24 time.

25 [Council members all rise and applaud.]

1 CHAIRMAN SWEARINGEN: It has been a great pleasure  
2 for me to serve as Chairman of the Council.

3 Thank you all for your cooperation and assistance.

4 The meeting is adjourned.

5 [Whereupon, at 10:15 o'clock a.m., the meeting  
6 was adjourned.]

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